

Appl. No. 10/751,184  
Amendment dated  
Reply to OA of May 2, 2005

**Amendments to the Claims:**

This listing of claims will replace all prior versions and listings of claims in the application.

**Listing of Claims:**

1. (Currently amended) A method for etching a metal layer having an oxide-based antireflective coating (ARC) layer thereon, comprising the steps of:

dry cleaning the ARC layer performing a first dry cleaning process in an etching chamber with an oxide-based gas; and

etching at least part of the metal layer performing a second dry cleaning process in the chamber with a gas mixture comprising Cl<sub>2</sub> and CHF<sub>3</sub>,

wherein the first and second dry cleaning processes are carried out before etching the metal layer to eliminate byproducts remained in the chamber.

2.(Previously presented) The method of claim 1, wherein a flow rate of the Cl<sub>2</sub> ranges from about 100 sccm to about 200 sccm.

3.(Previously presented) The method of claim 1, wherein a flow rate of the CHF<sub>3</sub> ranges from about 5 sccm to about 30 sccm.

4.(Currently amended) The method of claim 1, wherein a pressure of each of the cleaning-and-etching-steps the dry cleaning processes ranges from about 8m Torr to about 50m Torr.

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5.(Currently amended) The method of claim 1, wherein a source power of each of the dry cleaning and etching steps the dry cleaning processes ranges from about 500 W to about 1200 W.

6.(Currently amended) The method of claim 1, wherein a bias power of each of the dry cleaning and etching steps the dry cleaning processes ranges from about 0 W to about 10 W.

7.(Currently amended) The method of claim 1, wherein the dry cleaning process method processes are performed for about 5 seconds to about 30 seconds.

8.(Previously presented) The method of claim 1, wherein the oxide-based gas comprises oxygen.

9.(Currently amended) The method of claim 1, wherein the dry cleaning and etching steps processes are performed sequentially in a single etching chamber.

10.(Currently amended) The method of claim 1, wherein the metal layer and the ARC layer are on a wafer having a center area and an edge area, and the etching step dry cleaning processes decreases a microloading effect in the edge area upon etching the metal layer.

11.(Previously presented) The method of claim 4-10, wherein the metal layer is etched at a rate that is substantially the same in the center area and the edge area.

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12.(Cancelled)

13.(Currently amended) The method of claim 1, wherein the etching step further eliminates aluminum-and-silicon-containing-byproducts the byproducts remained in the chamber comprise aluminum-and silicon-containing polymers.

14.(Previously presented) The method of claim 1, wherein the metal layer comprises an aluminum layer.

15.(Previously presented) The method of claim 14, wherein the metal layer further comprises a titanium nitride layer under the aluminum layer.

16.(Previously presented) The method of claim 1, wherein the ARC layer comprises a silicon oxide.

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Priority. Docket No. PLA31069/ANS/US

IN THE UNITED STATES PATENT & TRADEMARK OFFICE

IN RE APPLICATION OF:

Sang Hun Oh : GROUP ART UNIT:

SERIAL NO: 10/751,184 :

FILED: December 30, 2003 : EXAMINER:

FOR: Method for Etching a Metal Layer in a Semiconductor Device

I hereby certify that this document is being deposited with the United States Postal Service as first class mail in an envelope addressed to Commissioner for Patents, Washington, D.C. 20231, on January 27, 2004.

By:   
Andrew D. Fortney, Ph.D.

CLAIM FOR PRIORITY UNDER 35 U.S.C. 119(a)-(b) AND 37 C.F.R. 1.55

COMMISSIONER FOR PATENTS  
WASHINGTON, D.C. 20231

SIR:

Applicant respectfully requests under the Paris Convention for the Protection of Intellectual Property the benefit of the filing date of the prior foreign application(s) identified below:

<u>Serial No.</u>	<u>Filing Date</u>	<u>Country of Filing</u>
10-2002-0086802	December 30, 2002	Republic of KOREA

A certified copy of the above-identified priority application is attached.

Respectfully submitted,



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별첨 사본은 아래 출원의 원본과 동일함을 증명함.

This is to certify that the following application annexed hereto  
is a true copy from the records of the Korean Intellectual  
Property Office.

출원번호 : 10-2002-0086802  
Application Number

출원년월일 : 2002년 12월 30일  
Date of Application DEC 30, 2002

출원인 : 아남반도체 주식회사  
Applicant(s) ANAM SEMICONDUCTOR., Ltd.



2003년 10월 10일



특허청

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